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In a brief introduction, this article expresses the concern that the concentration on the external components in audiolingually-oriented foreign language programs has diverted attention from the instructional fundamentals of time, learning processes, environmental structure, and teacher and student roles. A review of such basic principles of the "linguistic" method as (1) primacy of sound, (2) intensiveness, (3) inductive grammar, (4) words in context, and (5) linguistic interference is followed by an evaluation of the intensive method that refers to the modifications made in the traditional foreign language context by the linguist. Programed instruction is defined, discussed, and evaluated in the concluding half of the article. Suggested for research is further experimentation with more flexible (1) organizational frameworks, (2) use of the language laboratory as a teaching machine, and (3) student and teacher roles. (AB)

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Toward a Redefinition of Teacher Role and Teaching Context in Foreign Language Instruction

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INTRODUCTION

SINCE the enactment of the 1958 National Defense Education Act, the installation of language laboratories and other electro-mechanical devices has mushroomed in secondary establishments and institutions of higher learning all over the United States: it was unofficially reported that in 1961 about 2,500 secondary schools and about 700 colleges and universities possessed some kind of language laboratory; the estimate as of October 1, 1962, was 5,000 secondary schools and 800 institutions of higher learning. The introduction of technology in the foreign language (FL) teaching field is not a phenomenon limited exclusively to the United States. In France, for instance, half of the universities already boast of a language laboratory and plans are being made for their introduction in secondary establishments. The introduction of electro-mechanical devices was motivated by a revolution in language teaching methodology and materials labelled successively the Intensive Method, the Linguistic Method, the Aural-oral, the Audio-lingual and the New Key. While no efficient teaching of language as sound first and letters second is possible without them, the concentration on the inanimate and external components of FL instruction has diverted attention from its more fundamental components: time, the role of the teacher, the nature of the FL learning process, the structure of the teaching environment, and—oh, yes—the student.

THE "LINGUISTIC" METHOD

The most sophisticated FL teaching techniques and materials employed currently in the United States, and adapted in various other countries, all sprang from the active participation of linguists in the Intensive Language Program of the early 1940's and it might be useful, perhaps, to rapidly review the fundamental principles held by linguists *qua* language teachers.[1]

Primacy of Sound or "*Language is the noises we make with our face and not the scratches we make with our fist.*"[2] During World War II the linguist was called upon to implement courses designed to train the student to communicate effectively with natives of countries to which his duty called him; common sense, therefore, dictated focusing entirely on spoken speech patterns. Also from his experience with preliterate languages it was obvious to the linguist that sound was primary and writing only a secondary derivate. Western man, with his deeply ingrained orthographic habits, is wont to forget or refuse to accept this difference and to deal with linguistic data in terms of a string of letters separated by spaces, yet the construction of sound audio-lingual oriented materials depends on a clear grasp of the relationship between speech and writing. When one asks the average educated American layman to give the rules for the formation of the regular noun plural of English, that is to say, to relate *cat* and *cats*, *dog* and *dogs*, *horse* and *horses*, the answer is invariably a confident: "one adds *-s* or *-es*." But this type of formulation is not particularly useful to a foreigner who is interested first and foremost in **speaking** accurately. He must know (1) how many different suffixes there are and how each sounds, and (2) since several are involved, the basis of selection among the variants. A linguist would state the rule as follows: to form the regular plural of a noun one adds

[1] For a detailed discussion of the Intensive Method and its subsequent adaptation, see William G. Moulton, "Linguistics and Language Teaching in the United States 1940–1960." In *Trends in European and American Linguistics 1930–1960* (C. Mohrmann, A. Sommerfelt, and J. Whatmough, eds.) Utrecht, Antwerp: Spectrum, 1962.

[2] R. A. Hall, Jr., *Leave Your Language Alone!*, Press: Ithaca: Linguistica, 1950, p. 50.

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/tz / if the noun ends with the consonants /s z č ǰ š ž/, for example, *rose/roses, church /churches;* one adds /s/ if the noun ends with a voiceless consonant, with the exclusion of those mentioned previously, for example, *cat/cats, lip/lips;* finally one adds /z/ elsewhere, for example, *radio/radios, dog/dogs, bird/birds, bee/bees;* note that there is no isomorphism between the written and the spoken language rules. From a different point of view, reference to the written language to explain the spoken language is dangerous for the former does not have machinery to represent many of the phonic features which keep words and phrases apart, in English, for instance, differences in stress levels: as many American presidential hopefuls have discovered to their chagrin, not every *white house* is the *White House.*

Intensiveness. Since the linguist viewed language as a complex aggregate of various sets of sensory and motor habits, he concluded that nothing short of relentless repetition leads to audio-lingual fluency. Even the native speakers of a language are quite unable to describe these habits, most of which lie beyond their threshold of awareness, and little profit is derived from the memorization or explication of rules. The principal activity of the foreign language classroom is constant imitation and repetition of a native model, *mim-mem.* As Leonard Bloomfield, the leading theoretician of American wartime applied linguistics put it: "Language learning is over-learning. Anything else is of no use."[3] This emphasis on the brute mechanical aspect of language learning was one of the key long-range contributions of linguists, for it impressed upon the educated public the need for intensive contact and active participation for the acquisition of audio-lingual skill. Typically, courses in the commonly taught languages (French, German, Italian, Spanish) at the Foreign Service Institute of the Department of State—the most outstanding and influential offspring of the Intensive Language Program training centers—provide for more than 450 hours of instruction in small groups of not more than six participants; the instruction period for "exotic" languages is more than twice that length. By comparison, the *optimum* U.S. college first-year course of 150 hours in classes of about twenty appears hopelessly unrealistic.

Authenticity of Model. Linguists carried over into the classroom the anthropologist's concept of the "informant," the native speaker as sole authority and ultimate source of the language. Only a native speaker and any native speaker could manifest the structure of the language at all levels and his constant presence in the classroom—live or recorded—was required. This reliance on informants led to a healthy reaction against normative statements and adhesion to formal styles of speech and resulted in the inclusion of more informal pronunciation, forms, and constructions in teaching materials. But, lest it be assumed that this reaction was accompanied by a glorification of "incorrect" speech, it must be pointed out that where dialect and style variations were extensive—as in French and Spanish, for instance—linguists chose the best educated and socially prestigious speakers available and based materials on standard dialects.

Inductive Grammar. Unlike the *direct method* enthusiast the linguist did not throw out the baby with the bath water, and *grammar* was very much—perhaps too much—in evidence in FL courses he directed and teaching materials whose preparation he supervised. But to him *grammar* was neither the memorization of rules (in French, the past participle conjugated with *avoir* agrees in number and gender with a preceding direct object), nor the recitation of paradigms (Latin, *amo, amas, amat . . .*), nor was he concerned with linguistic etiquette (thou shalt not say *I feel badly*); it was essentially a descriptive statement of the structure of sentences and the occurrence of forms. Generally, grammar was presented inductively through *pattern drills* followed by sometimes quite technical statements of the grammatical features manifested in the drills, but it was asserted that only after mastery of a pattern is acquired will accompanying explanation be fully useful. The use of grammatical rules as "predictors" or linguistic behavior was expressly banned: "they (rules) are the description of the student's own performance. *Rules ought to be summaries of behavior.* They function only secondarily as 'predictors'."[4]

[3] Leonard Bloomfield, *Outline Guide for the Practical Study of Foreign Languages.* Baltimore: Linguistic Society of America, 1942, p. 12.

[4] R. L. Politzer and C. N. Staubach, *Teaching Spanish: A Linguistic Orientation.* Boston: Ginn, 1961, p. 8.

Words in Context. Most educated laymen harbor the simplistic notion that languages are made up of words with a few "idioms" tossed in for good measure—and that learning a language involves simply the memorization of different sets of words whose meaning content is isomorphic with that of native equivalents. Unlike direct method enthusiasts who nurtured this conception by the association of image and word and by forcing isomorphism through artificial translations of *the pen of my aunt* variety, linguists presented vocabulary through the memorization and recombination of complete sentences arranged in self-contained dialogues and accompanied by approximate contextual equivalents rather than word-for-word glosses.

Linguistic Interference. The most important contribution of linguistics to the preparation of teaching materials lay in the theory that areas of difficulty can be predicted in advance by point by point comparison of the structure of the native and target languages. For example, in English all vowels which occur at the end of a word or phrase are long and followed by a glide: *sue, bow, see, say;* Americans predictably mispronounce final French vowels which are always short and tense: *beau, sous, si, c'est.* Similarly, most dialects of Spanish exhibit a five vowel system. Standard French, on the other hand, has up to eight vowels excluding the front rounded series and the nasal vowels:

French	i	é	è	a	â	ó	ò	u
Spanish	i	e		a		o		u

Spanish speakers can be expected to—and indeed do—have difficulty perceiving and realizing contrasts of the type *gué/guet; là/las; pomme/paume.*

Pattern interference results from differences in the structuring of linguistic units at various levels as well as differences in the distribution of units on any one level. French, English, and Spanish have phonetic nasal vowels, e.g. French *tante* and English *taunt;* French *passion* and Spanish *pasion.* However, in French, nasality of vowels is functional since *tante* contrasts with *tâte* and *tant* with *tas,* but in both English and Spanish any vowel followed by a nasal consonant is automatically nasalized. Going from English and Spanish to French interference results from the different phonological role of the feature of nasality. Interference problems at the grammatical and lexical levels are more numerous and complex. Consider the English sentence *My father was a teacher.* The faulty rendition **My father was teacher* could be elicited from French, Russian, or Spanish speakers but for different reasons. Both French and Spanish possess the form class, article, but it is not used in the contextual equivalents of the English sentence given above: *Mon père était professeur* and *Mi padre era professor.* The article appears elsewhere, however: *C'est un professeur; Es un professor.* In Russian there is no form class article: *Otets u menia byl učitel* and *On učitel.* For the linguist, then, the preparation of pedagogical materials had to be preceded by the contrastive analysis of the "target" and native languages at all relevant levels, starting with phonology and progressing through morphology, syntax and lexicon.

Evaluation of the Intensive Method

While the above cited principles of FL instruction have been accepted almost in toto by all programs that aim at the acquisition of audio-lingual skills, it was not primarily by the application of his specialized knowledge to the preparation of materials or the elaboration of teaching techniques that the linguist was to influence the course of FL instruction. Rather, it was by the modification of the traditional FL teaching context: (1) small classes, seldom above ten students; (2) intensive contact, generally at least thirty hours of contact; (3) specialization of teaching function, the linguist provided guidance and supervision while the native informant served as a drilling machine; (4) variation in class size, notably the Cornell University Program where students met in groups of 50 for grammatical analysis, in groups of twenty for lab drill, and in groups of ten for drill with a native informant. Linguists thus took the teacher out of the classroom since neither pedagogical experience nor insight into the teaching process were required of the supervising linguist or of the native informant. Indeed, prior "traditional" FL experience was considered a handicap for effective informant work.

Obsessed with the structure of language, linguists never pondered the nature of the

process which takes place in the FL classroom: Language *learning;* seldom did they construct controlled experiments to test some of the assertions they made *qua* language teachers, and it seldom occurred to them that the success of Intensive-type instruction might be due to external factors—student motivation, intensive contact, and the like—rather than to operational principles and models. The Intensive Method operated with the simplistic "Sunburn" model of language learning: the student was exposed to FL patterns until he soaked them up. Typically, the materials utilized by Intensive Method programs and their heirs—FSI, A-LM, etc.—consist of dialogues which are to be "over-learned" through relentless repetition, pattern drills in which structures are repeated and manipulated *ad nauseam*, and comprehension exercises in which lexical items and grammatical features presented in the dialogue and the pattern drills are recombined with a minimum of new lexical items. While materials prepared according to the "linguistic method" contain formal pronunciation drills—minimal pair oppositions and practice of phonemes in representative environments—pronunciation is acquired in shotgun fashion parallel with the memorization of the basic sentences of dialogues. In such sentences as *Je suis heureux de faire votre connaissance, Mademoiselle* /žəswizoèroé dfèrvòtrəkònésās madmwazèl/, it is difficult for the instructor to locate the exact source of the student's difficulties since they may arise from faulty discrimination, improper differentiation, or simply short memory span; in sentences that may contain several points of phonologic interference correction becomes sporadic and inconsistent.

The most serious shortcoming of these materials is that they constitute a closed system. The student learns a finite stock of basic sentences which he can parrot if the proper circumstances present themselves; at best the student can only be expected to vary by inserting lexical items in the slots of the pattern drills he has manipulated. Recent experiments in child-language acquisition suggest that human beings do not learn their first language by *mim-mem* but that they might construct from their linguistic environment a model which can be projected beyond what has been heard in the past to form and recognize new combinations. Berko, for instance, has shown that American pre-school children and first graders can extend rules for noun plural formation to nonsense words with a high degree of accuracy; on the basis of *dog/dogs, cat/cats, horse/horses* they analogize *wug/wugs, fap/faps, gutch/gutches.*[5] Similarly, it is well known that on the basis of the productive *-er* verbs French children analogize **vous disez* instead of *vous dites.* It is reasonable to posit that adult second language learning consists of more than the storing up of rehearsed utterances and must involve the construction of a grammatical model on the basis of which utterances which have never been heard before are "created." The construction of the model might be catalyzed by the artful presentation of material, for instance, contrastive pairs which point up generative processes, or more simply by the statement of *deductive* rules.

Linguists' organization of subject matter and instruction followed literally the order of descriptive field work: First phonemic contrasts, then assimilation of forms through pattern drills, and last, translation exercises to handle the syntactical level. Since the phonologic and morphophonemic structure of a language can be analyzed in terms of finite sets or lists readily discoverable by the analyst, Intensive Method techniques led to satisfactory assimilation and control of these two linguistic levels. Most pattern drills are of the substitution or correlation variety: the student is provided with a *basic sentence* and *cues* which are to be substituted in specified slots of the basic sentence. In correlation drills the substitution of an item in one slot is accompanied by an obligatory change in another. For example, see the substitution and correlation drills at the top of the next page.

In effect, this type of drill does not differ substantially from traditional conjugation and declension except that substitution and variation take place within complete utterances. Like traditional grammars, Intensive Method materials present structure in exhaustive paradigms; such differences as occur are secondary in nature. For instance, consider the

[5] Jean Berko, "The Child's Learning of English Morphology." *Word*, 1958, **14**, 150–177.

Substitution Drill

	Model	*Student*
Basic Sentence:	Necesitan más tiempo.	Necesitan más tiempo.
Cues:	Quieren	Quieren más tiempo.
	Quiero	Quiero más tiempo.
	Necesita	Necesita más tiempo.

Correlation Drill

	Model	*Student*
Basic Sentence:	Necesita ud. el libro?	Necesita ud. el libro?
Cues:	uds.	Necesitan uds. el libro?
	nosotros	Necesitamos el libro?

traditional and "New Key" presentation of a French present tense irregular verb paradigm:

Traditional	*New Key*	
Je vais.	Je vais à Paris.	/vèZ/
Tu vas.	Tu vas à Paris.	/vaZ/
Il (elle, on) va.	Il (elle, on) va à Paris.	/va/
	Ils (elles) vont à Paris.	/vōT/
Nous allons.		
Vous allez.	Vous allez à Paris.	/alèZ/
Ils (elles) vont.	Nous allons à Paris.	/alōZ/

Admittedly, the New Key procedure reveals more accurately the structure of spoken French, but a more radical change would have been to present first forms in /v-/, providing only the familiar second person and using *on* for first person plural; forms containing /al-/ would be drilled later. The ultimate objective of an FL course is to lead the student to generate all and only grammatically correct and stylistically congruent sentences of the FL. This ability presupposes previous assimilation of a finite set of grammatical patterns and a knowledge of the substitution possibilities within specific structural slots, but some provision must be made for the extension of patterns beyond the limits of drilled substitution possibilities. This suggests a very careful ordering of the subject matter to give priorities to patterns characterized by greatest generality—in French, verb forms manifesting the bare stem of one-stem verbs (/dòn/ *donne, donnes, donnent*) would obviously be presented before forms showing endings (/doné/*donnez*, /donō/*donnons*) and two-stem verbs (/fini/ *finis:* /finis/ *finissent;* /vã/*vend:* /vãd/ *vendent*); for the latter, priority would be given to /is/ verbs since these constitute a marginally productive class, whereas the others make up a closed and residual list.[6] Syntactic rules with high predictive potency, sometimes stated in semantic terms—despite the taboo that attaches to meaning among certain structural linguists—will have to be discovered and presented to the learner if he is to produce, say, *He tells me to do it* and *He asks me to do it* but not **He says me to do it.*

Like the traditional FL teacher, linguists failed to realize that some teaching functions can be assumed by the learner himself. Consequently Intensive Method programs retained the conventional class organization which keeps all students in lockstep and fails to provide for individual variations in linguistic aptitude, motivation, attitude, and previous experience in the target FL. Recent and anticipated developments in electro-mechanical devices, the expansion of language laboratory installations, and the advent of the new field of programmed instruction make it imperative to experiment with more flexible organizational frameworks. Patterns radically different from the present one-teacher or linguist-informant and one-classroom systems are called for to permit instruction on a near-tutorial basis where each student is permitted to progress at his own optimum pace.

Programmed Instruction

What is programmed instruction?[7] First, al-

[6] For a detailed pedagogical analysis of French verb stem classes, see Albert Valdman. "Linguistic Statement and Language Teaching." In *Proceedings of the IX International Congress of Linguistics* (H. G. Lunt, ed.) The Hague. Mouton, 1963, 499–506.

[7] More detailed discussions of the application of programmed learning theory to FL instruction appear in John B. Carroll, "A Primer of Programmed Instruction in Foreign Language Teaching." *International Review of Applied Linguistics*, 1963, 1, 115–141, and in Stanley M. Sapon, "Programmed Learning and the Teacher of Foreign

though its most vocal converts and most bitter critics are quick to underscore the link, there is no necessary connection between programmed instruction and teaching machines. While many programs are designed to be used in conjunction with some mechanical presentation device, there is no necessary connection between the two concepts: in the most complex teaching machine it is the program fed into the machine that makes learning possible.

There is also the tendency, fostered, I regret to say, by textbook writers and publishers, to equate programmed learning with one of its constituent features, namely, the presentation of the correct response immediately after the student has reacted to a stimulus. In this way, we are reassured that FL programmed materials exist in abundance and that the new terminology is merely another manifestation of the psychologists' plot to take over the FL teaching business.

Stated most simply, programmed instruction is any method of instruction which believes that a complex body of knowledge can be learned best when it is separated into its smallest components. As such, of course, programmed instruction is not a new concept. The Seventeenth Century French philosopher, René Descartes, gave, in his *Discours de la méthode*, a succinct definition of a programmed procedure:

"... diviser chacune des difficultés ... en autant de parcelles qu'il se pourrait, et qu'il serait requis pour les mieux résoudre."

And he continues:

"... conduire par ordre mes pensées, en commençant par les objets les plus simples et les plus aisés à connaître, pour monter peu à peu, comme par degrés, jusqu'à la connaissance des plus composés ..."[8]

Basic to programmed instruction is the behavioristic concept of learning. Learning is said to have taken place when an organism's behavior has been changed. Programmed instruction involves changing an organism's behavior by the technique of *operant conditioning*, a type of behavior control or modification by which an organism, be it a human being or a white rat, is taught to react to new stimuli and to produce new responses by the careful *shaping* of existing responses. In shaping a response one starts from one of the organism's existing responses that comes closest to the desired response and then by *reinforcing* only responses that come closer and closer to the desired or *terminal behavior*. For instance to teach a French speaker to produce English /θ/ as in *thin*, one would start from a lisped /s/, present at least in any French speaker's passive sound inventory, and by appropriate shaping lead him to contrast consistently /θ/ versus /s/, for example *thin* versus *sin*, and /θ/ versus /f/, for example *thin* versus *fin*. Although quite correct from a linguist's point of view, one would not start from /f/ as in French *fine*, since that phoneme has no sporadic variants phonetically similar to English /θ/. Reinforcement may be negative, as when a white rat receives an electrical shock after pressing the wrong lever, or positive, as when the rat receives a pellet of food for pressing the right lever. Positive reinforcements are usually termed *rewards*. It has been found by experience that for students who are previously motivated to learn, the simple signal that a response is correct functions as a potent reward.

In view of the psychological bases of programming theory, any material or pedagogical technique which contains the following characteristics can be said to constitute programmed instruction.

1. Rigorous specification of terminal behavior.
2. Division of the subject matter to be taught in a sequence of gradual minimal steps.
3. Immediate confirmation and reinforcement of student responses.
4. Active mode of response on the part of the student.

Terminal Behavior. Since the sequence of responses that the learner will be trained to make is determined by the desired terminal behavior, a very detailed specification must be drawn up of the skills, knowledge and attitudes the student is expected to achieve upon completion of the program. The specification must be made in operational, observable and measurable terms. To state, for instance, that a course is designed to train the student to speak English fluently without making glaring errors

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Languages" in *Final Report: Seminar in Language and Language Learning;* Seattle (Department of Romance Languages, University of Washington), 1962, pp. 102–106.

[8] René Descartes, *Discours de la méthode*, Paris: Mignot.

is hardly informative. A more precise statement would be expressed in terms of a series of terminal behaviors on various linguistic levels: auditory discrimination, differentiation of a set of contrasts, accuracy in handling secondary phonologic features, speed of recognition and production, degree of control of listed grammatical features and lexical items, overall comprehension of connected texts at stated noise levels, ability to recognize and shift into stylistic and dialect variants, etc. In other words, the preparation of efficient programmed materials presupposes the definition of linguistic fluency and proficiency in terms of quantified levels of performance in a finite number of components. It is important to note that programmed instruction prescribes no view of subject matter and the technique is not inherently audio-lingual oriented; a program can only reflect the programmer's views concerning the subject matter treated and the terminal behavior he has specified. For instance, it would be highly desirable to prepare programmed materials which led to the rapid translation of a FL text in English—these would be far more efficient pedagogically than most present-day Graduate Reading Courses.

Organization of Subject Matter. The subject matter of the course of instruction must be organized and presented in a carefully designed sequence of minimal steps, such that each step is made easier by virtue of the assimilation of material presented in previous steps. Note that step-size is not determined exclusively by contrastive linguistic analysis of the features involved; teaching experience, insights into the learning process, and observation of students are probably more significant.[9] Step-size should be so planned that the student progresses toward the terminal behavior making a minimum of errors in the process. As opposed to much conventional learning, programmed learning is "trial-and-success" learning. While it is possible to insult the intelligence of the learner by breaking-up a learning task into too many steps, most subject-matter specialists who try programming tend to make steps much too large; paradoxically, the more frames a program contains, the faster students work through it.

Although ideal step-size can be determined by the student's reactions, it does depend on prior analysis of the components of a given linguistic feature and the determination of possible areas of interference. By programming standards Intensive Method or New Key-type material is quite gross. For example, consider the following drill from *FSI Basic French*, Unit 3. It is a *Learning Drill* which purports to teach the student to select among the locative preposition groups *au*, *à la*, and *à l'*.

Basic Sentence:
Allons-nous à la gare?

Cues: va-t-elle	Va-t-elle à la gare?
au restaurant	Va-t-elle au restaurant?
Sont-ils	Sont-ils au restaurant?
A l'hôtel etc.	Sont-ils à l'hôtel?

Leaving aside problems of pronunciation, note that the student is forced to substitute in two-slots and is given no cue as to when to select *au*, *à la*, or *l'*. It is not surprising, therefore, that students, until they "memorize" the drill, emit such replies as *sont-ils va-t-elle*. A programmed sequence would first point up the correlation between the fact that nouns ending with a vowel are preceded by *au* and would then proceed as follows.

STEP ONE

We select masculine nouns ending with /6/.

Repeat: bureau
Repeat: au bureau

Now provide the preposition:

bureau→au bureau
bateau→au bateau
café→au café
restaurant→au restaurant

[9] In this regard I quote from A. P. Van Teslaar, "Les domaines de la linguistique appliquée (I)", *International Review of Applied Linguistics and Language Teaching* 1: 50–77 (1963), p. 60:

L'analyse scientifique d'une langue vise à une description qui avec élégance et économie spécifie sans ambiguité les éléments constituants ou les processus générateurs de la structure, et la façon dont ils fonctionnent dans le système total. Mais ce qui satisfait logiquement n'est pas nécessairement efficace pédagogiquement; et une économie sévère dans l'analyse linguistique n'offre que peu de rapports avec les voies qui mènent l'étudiant à une maitrise solide de la langue. L'enseignant est en droit de demander au linguiste une description précise et complète de la langue à étudier; ce n'est pas ce dernier qui pourra lui spécifier l'ordre et le mode de présentation des structures pas plus que les exercises qui doivent les accompagner. La réponse à de telles questions ne dépend pas de la langue même, mais de la psychologie de l'étudiant.

STEP TWO

We practice in longer utterances, using a slot-substitution drill, but substitutions occur only in a single slot.

	Il va au bureau.
café	Il va au café.
restaurant	Il va au restaurant.

Note that we add words the student does not know and that he has not heard before to test whether he can generalize the pattern; or to state it differently, whether he has assimilated the rule.

terrain	Il va au terrain.
marché	Il va au marché.

STEP THREE

Association *le, un* (assuming these have been presented) and *au*.

Il cherche le bureau.	Il cherche au bureau.
C'est un café.	C'est au café.

At this stage the student can be said to have learned a new set of responses: he has been led to analogize and has internalized the rules: (1) most nouns ending in a pronounced vowel are *le* (i.e. masculine) nouns; (2) these nouns take the *au* /ó/ variant of the locative preposition.

A characteristic feature of minimal step-increment is the introduction and gradual removal of prompts called *fading* or *vanishing*. In teaching students the days of the week in Italian one might simply have students repeat the list, or, what amounts to the same thing, substitute them in basic sentences:

Vanno a Roma lunedì
martedì
mercoledì
jovedì
sàbato
doménica

A programmed sequence would first isolate nouns ending in *-dì*. They would first be presented in full, next only the dissimilar elements would be given (*lune-, marte-, mercole-*), then only the first syllable (*lu-, mar-, jo-*), the student providing *-nedì, -tedì, -vedì*, then perhaps the English equivalent.

In programmed materials pronunciation is presented one feature at a time and students are not asked to differentiate target language sounds from each other (for example, English pairs like *sit/seat, fit/feat*) or target and native language near-equivalents (for example, French *beau* versus English *bow*) until they can consistently discriminate.

Immediate Feedback and Reinforcement. In programmed instruction practice does not make perfect unless desired behavior is reinforced immediately; unreinforced practice can be dangerous for it may lead to overlearning undesired responses. After each step the student must have a *confirmation* of the correctness or incorrectness of his response, as the case may be. The smaller the time-span between response and confirmation the more effective the reinforcement or extinction of the response. There is a high degree of interdependence between appropriate step-size and efficacy of confirmation: if steps are too large there can be no confirmation.

It is quite easy to confirm responses when the student's task is limited to discrimination or constructing written answers; one need only print the correct reply on the programmed student booklet. But how does one confirm oral responses? Three choices present themselves:

1. the instructor
2. an evaluating device
3. the student himself

The first alternative is excluded by definition since the ultimate goal of programmed instruction is self-instruction, and one can hardly conceive of generalized private tutoring in an age where the shortage of qualified teachers is a universal problem. A speech analyzing computer? Unfortunately an operational let alone economically practicable language-evaluating machine is still in the realm of science fiction. There remains the student himself. Conventional instruction also chooses the latter alternative at least on the grammatical level: in four-phrase drills the student is expected to correct his response after matching it against the confirmation:

1. Basic sentence: Busca el libro.
2. Cue: Uds.
3. Student: Buscan el libro.
4. Confirmation: Buscan el libro.

Workers in programmed FL instruction have taken on the challenge of having the student actively participate in the entire learning process. On the assumption that the ability to discriminate between two sounds leads directly

to the ability to differentiate, the student is taught to tell apart native and target language near-equivalents and target language contrastive pairs. Most researchers report that the assumption seems generally valid and, surprisingly, the most noteworthy feature of the terminal behavior of the products of completely self-instructional programmed courses is the degree of accuracy in pronunciation, not only at the phonemic level but in phonetic features and intonation. However, more research is needed and more widespread testing of programs necessary before it can be claimed that any student, no matter how low his linguistic aptitude, can function as an accurate self-evaluator and can acquire a flawless pronunciation in any language through self-instruction alone.

Active Mode of Student Response. It is quite apparent that in programmed materials the student working individually is given the opportunity to react actively either by imitating a model, performing oral transformations, even engaging in a dialogue with the program as well as constructing written responses of varying length. Whereas, in the conventional classroom he performs solo a dozen times with diffuse or non-existent confirmation, in his tête-à-tête with the program he produces several hundred responses in a single class-period. The sequence designed to teach the days of the week in Italian may seem over long and, no doubt, the student could accomplish the task by simply "mim-meming" the list. But programmers have discovered that requiring the student to respond actively—orally, in writing, or by pushing a button—in a long series of graduated steps forces him to spend more time on a stated sequence and insures **total**, that is, "real" learning.

Programmed instruction can also function as a research tool. Because of its organization into small, finite steps, a programmed sequence provides constant feedback upon its effectiveness. With proper records of student reaction such questions can be answered as: Does the sequence lead to the specified terminal behavior? Are the theoretical assumptions underlying the sequence valid? What does the sequence teach in addition to the criterion behavior? When the same questions are asked about a textbook, the answer rests on the authority of the author or the teacher who uses it. In programmed instruction the student on the basis of his learning, is the sole authority. As Professor Sapon states: "... programmers must be made of stern stuff indeed if their egos are to survive.... The programmer must accept *a priori* that it is possible to teach what he sets out to teach. If the results are not as he hoped for, then he must recognize his own inadequacy, and seek the source of his errors."[10]

The Language Laboratory as a Teaching Machine

In the FL field, the brightest promise of programmed instruction lies in the redefinition of the learning context. Heretofore, even in institutions endowed with extensive language laboratory facilities, FL courses have been defined chiefly in terms of instructor contact. Even where class-size has been reduced to as low as six, students progress in lockstep fashion. Geared to at least partial self-instruction programmed materials permit experimentation with language class patterns suited to instruction on a near-tutorial basis.

With properly programmed materials the language laboratory and a programmed workbook—the latter is a very modest device and differs from a conventional book only in that the material is laid out to permit a progressive display of problems and appropriate confirmations—can assume most of the tasks currently performed by the teacher or the informant-linguist combination: providing an authentic model, initial presentation of material, drill, constant review, achievement testing, explanation, directed conversation. Since the student must assume responsibility for judging the accuracy of his own responses the language laboratory equipment must be audio-active, that is, the student must be able to hear his own responses immediately upon production through his earphones rather than by delayed internal conduction. Note that the student need not record his responses on a separate student track. Any language laboratory where each student works individually from a tape played from his own student

[10] *Op. cit.*, p. 103.

position rather than a master console, and where student microphone and earphones are electronically connected to provide for the audioactive feature can function as a teaching machine. Of course, a more sophisticated language laboratory which permits monitoring of student responses from a central console, the dialing of short ten-minute programmed sequences directly from individual student positions, recording of student responses at both the individual student position and at the master console, constitutes a research tool as well as a teaching component.

We are severely narrowing the scope of future developments and curtailing the instructional efficiency attainable in our field if we continue to pose all problems in terms of the opposition, live teacher versus the-language-lab-as-a-teaching-machine. The language lab is but one of the many presentation devices at our disposal and is complemented or maybe superseded by various combinations of record players, closed or open-circuit radio broadcasts, visuals, programmed or conventional textbooks and workbooks, and human beings. True, it was the advent of the tape recorder that rendered inefficient the non-human use of human beings as drilling machines but that should not prevent us from being aware of the fact that programmed learning and self-instruction is still possible without a language laboratory: The recorded program's the thing!

The Teacher's Role

With the language laboratory, the textbook, and the student fully integrated in the teaching system and assuming most "teaching" tasks, what is there left for the live teacher to do?

In the elaboration of audio-lingual methods, we have come to remember belatedly that parroting basic sentences and performing mechanical pattern drill is not communication, i.e., the natural use of language in an authentic cultural context. Skillful elicitation of authentic conversation without straying from the confines of known patterns or succumbing to the temptation to explicate or drill is the teacher's primary function, a function that no machine and no set of programmed materials will readily assume.

If FL instruction is not to degenerate into the mere imparting of skills, it must have transcending values. To quote Mortimer Graves, former Director of the American Council of Learned Societies, and a man whose foresight made the Intensive Language Program possible:

> The educational purpose of studying . . . [a] first foreign language is not primarily the acquisition of some useful control of it . . . but the extension of . . . language sophistication beyond the bounds of . . . [one's] own language and the mastery of techniques by which this kind of transfer can be made.[11]

In addition to skillfully leading the student to "*display*" knowledge and skills *learned* in autodidactic sessions the teacher must transmit positive attitudes toward language as a cultural phenomenon and provide insights into the language learning process. These are precisely the attitudes and insights that might help develop in our youth "a sense of values—personal, human, social—so that they may become discriminating, free individuals."[12]

[11] Mortimer Graves, "Languages in Changing Education." *Linguistic Reporter*, 1959, 1, p. 3.

[12] Kenneth W. Mildenberger, "Problems, Perspectives, and Projections." *Materials and Techniques for the Language Laboratory*. A report of the third Indiana Language Laboratory Conference held at Purdue University, March 23–25, 1961. Publication No. 18 of the Indiana University Research Center in Anthropology, Folklore and Linguistics. (Published as Part II, Vol. 28, No. 1 of International Journal of Applied Linguistics, January, 1962.)

A course where the live teacher performs only the two main tasks described here is being tried out at Indiana University under terms of a research contract with the U. S. Office of Education (the Elaboration and Implementation of an Elementary Audio-lingual Multiple-Credit French Course); for a preliminary description of this course and discussion of preliminary results see "How Do We Break the Lockstep," *Audiovisual Instruction* (Nov. 1962) 630–634 and "Toward Self-Instruction in Language Learning" to appear in the *International Review of Applied Linguistics*.